Optimizing the INEEL Infrastructure: Response to Performance Evaluation Measure 2.3.4.1

EXECUTIVE SUMMARY

The availability and functionality of the INEEL's infrastructure (such as buildings, structures, utilities, and roads) is critical to the laboratory's mission success. The infrastructure must provide the support needed by INEEL programs to meet their mission needs—both current and future. For example, the INEEL will decrease staff by 1,200 people during a six-month period from June to November of this year and, in contrast, experienced a 15% growth in research and development work in FY 2001 as compared to a forecast growth of 5%. The infrastructure component must be dynamic enough to accommodate these swings in business. The recommendations outlined in this report will satisfy these changes by providing facilities to accommodate new business while simultaneously reducing the building inventory to effectively manage our real property with fewer dollars.

As published in the *2001-2005 INEEL Institutional Plan*, the mission of the INEEL is to:

- Deliver science-based, engineered solutions to the challenges of DOE's mission areas, other federal agencies, and industrial clients
- Complete environmental cleanup responsibly, using innovative science and engineering capabilities
- Provide leadership and support to optimize the value of DOE Office of Environmental Management (EM) investments and strategic partnerships throughout the DOE complex
- Enhance scientific and technical talent, facilities, and equipment to best serve national and regional interests.

The *Institutional Plan* further identifies a requirement to " . . . revitalize the INEEL's science and engineering base and facilities, ensuring excellence in technical areas required by the INEEL's mission roles".

However, the INEEL's ability to provide the functional infrastructure necessary to meet its mission goals is challenged by a significant gap between INEEL infrastructure needs versus expected funding. The 2001 *INEEL Infrastructure Long-Range Plan* (LRP) describes the cumulative gap in infrastructure funding needs versus forecast infrastructure funding appropriations. The cumulative gap is now forecast at $123 million in FY 2002, $337 million by FY 2005, and extends to $889 million by FY 2010 (see Figure ES-1 and Appendix A).

DOE-ID and BBWI infrastructure managers and planners understand that infrastructure needs exceed the availability of funds, and that it is unlikely all the funding to meet those needs will ever be attained. Consequently, alternatives had to be identified which optimize the current infrastructure and limited funding to ensure INEEL missions and objectives are achievable. Accordingly, DOE-ID issued PEMP 2.3.4.1 to BBWI:

> ***2.3.4.1 Measure: By September 30, 2001, provide to DOE-ID documentation based on the INEEL Infrastructure Long-Range Plan which supports the need for 1) new and/or upgraded INEEL laboratory facilities, 2) engineering, research and administrative support***

building(s), and 3) INEEL Infrastructure restoration of the necessary utilities, roads, roofs, mechanical systems, etc., and other supporting INEEL infrastructure to meet currently identified INEEL missions. Recommendations will be developed for the purpose of significantly narrowing the INEEL infrastructure funding gap identified in the INEEL Long-Range Plan Executive Summary. The deliverable will include the steps necessary in the Preconceptual Phase of the Acquisition Process to satisfy Critical Decision-0 (CD-0). Those steps will include an acquisition strategy, alternative analysis, functional design requirements, preliminary cost and schedule estimates, and a justification of the mission need. The recommendations will also address any union issues, safety and health considerations, and articulate in some detail the estimated savings, cost avoidance, and other benefits.

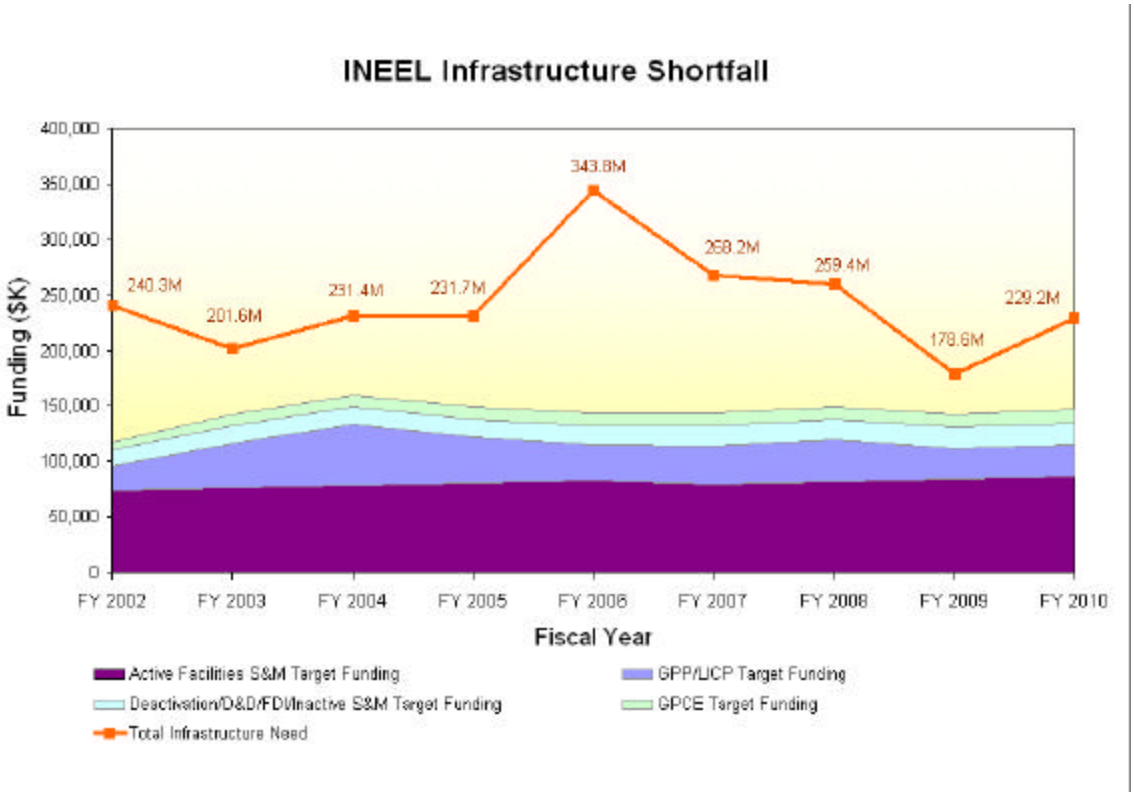

Figure ES-1. Year-by-year projected infrastructure funding shortfalls accumulate to a gap of $889 million by FY 2010 (see details in Appendix A)

In response to PEMP Measure 2.3.4.1, BBWI Infrastructure Programs developed innovative new proposals and new approaches to INEEL infrastructure funding and management. These proposals and management initiatives provide the functional buildings and support infrastructure necessary to meet INEEL mission needs at a cost that is significantly less than currently proposed. Collectively, the proposed projects and management initiatives successfully narrow (reduce) the INEEL's infrastructure funding gap by over $416 million (47%) from FY 2002 through FY 2010 (see Figure ES-2 and Appendix A). The net result is that the cumulative funding gap is reduced from over $889 million to just over $473 million by FY 2011.

Using outyears capital needs and funding forecasts along with infrastructure and program needs information compiled in the 2001 LRP, the BBWI Infrastructure Programs Department performed detailed analyses of currently proposed projects and formulated alternatives. Recommended options included opportunities for consolidation of like facilities, reduction of maintenance costs, and enlisting

new construction and procurement methods—such as the "Nine Block" graded implementation of commercial construction practices, establishing build-to-lease facilities on government ground and privatization of selected work activities. Eleven recommendations for infrastructure optimization were subsequently presented to DOE-ID and site contractor management. DOE-ID, site contractor management, and INEEL planners then ranked the recommendations and chose three of the top-ranked proposals for further investigation. It was determined that significant savings could be realized through 1) consolidation of INEEL laboratories, 2) establishing a consolidated engineering research office building at the INEEL site, and 3) then selectively restoring the minimum of remaining infrastructure (e.g., roads, utility systems, and communication systems) necessary to meet mission need. These findings resulted in the development of three new proposals which serve to satisfy the requirements of PEMP 2.3.4.1 – to provide the functional infrastructure necessary to support INEEL missions at a greatly reduced cost, support the mission goals of the *INEEL Institutional Plan*, and significantly reduce the infrastructure funding gap.

These three proposals entered the preconceptual stage of the acquisition process as

1. INEEL Consolidated Laboratory Complex
2. Site Engineering and Resource Facility
3. INEEL Infrastructure Restoration/Optimization Project.

The preconceptual proposals include acquisition strategies, analyses of alternatives (see Tables ES-2 and ES-3), functional design requirements, preliminary cost and schedule estimates, and justification of mission need. The proposals articulate in some detail the estimated savings, cost avoidance, and other benefits. Additionally, development of the proposals considered any union issues as well as safety and health concerns. The recommendations in this report are not final. The projects will be fully developed as the projects proceed through the Critical Decision process.

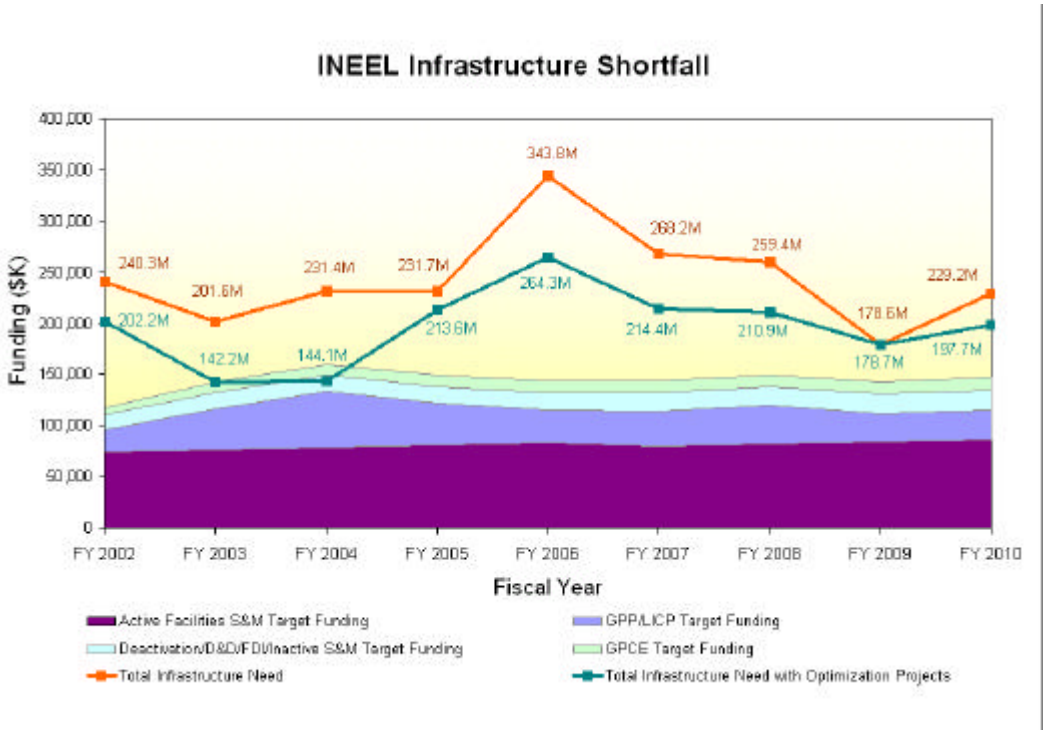

Figure ES-2. Innovative new PEMP 2.3.4.1 infrastructure optimization proposals reduce the forecast cumulative funding gap by $416 million through FY 2010 (see details in Appendix A)

The proposed INEEL Consolidated Laboratory Complex (ICLC) will replace and consolidate 185,000 ft^2 of outdated and deteriorating analytical, environmental, nuclear research, and radiological support laboratories from 13 different facilities (see Table S-2 in ICLC Summary) at the INEEL site. The alternative shown to best meet the mission need criteria is to construct a new 150,000 ft^2 laboratory facility at the Idaho Nuclear Technology and Engineering Center (INTEC) and lease a new 65,000 ft^2 laboratory facility in Idaho Falls. The preconceptual total project cost estimate of this alternative is $100 million ($87 million construction, $13 million lease). This project will result in reduced operating and maintenance cost savings of $4 million annually and contributes over $164 million in avoided capital upgrade/replacement costs. The new, state-of-the-art buildings would be located in Idaho Falls and INTEC – two of the INEEL's longest-lived facility areas.

As originally conceived, a new Site Engineering and Resource Facility (SERF) would have consolidated 34 buildings containing over 350,000 square feet of space into a single 150,000-square foot building housing 700 personnel. A second alternative proposed construction of two smaller buildings to consolidate the same existing buildings and population. This new construction and facility consolidation was expected to result in significant annual and life-cycle cost savings.

However, at the time the 2001 LRP was published and this infrastructure optimization initiative began, the forecast population for the INEEL was significantly different than present expectations. The alternatives for establishing a Site Engineering and Resource Facility were reconsidered in the light of a major workforce restructuring now underway at the INEEL. The restructuring is currently planned to reduce the INEEL population by 1,200 personnel – about half of which are expected to come from INEEL site facilities. Subsequent relocation of some remaining site employees to existing, newer site facilities and to available work locations in town would significantly reduce the need for a new Site Engineering and Resource Facility. Consequently, although the developed and considered Site Engineering and Resource Facility alternatives are presented in this report, the preferred alternative is to not pursue such a facility. With the workforce restructuring and subsequent relocation of some employees, desired site facility closures and associated cost savings can still be achieved. This approach could save more than $157 million in life-cycle costs through closure of some of the INEEL's older, inefficient facilities including those that were candidates for replacement by a Site Engineering and Resource Facility (see Table S-1 in SERF Summary).

In light of the recommendation that a new Site Engineering and Resource Facility not be pursued, it is especially important that the INEEL proceeds with construction of the TRA Administration Building Project as described in the Mission Need Document issued to the Office of Nuclear Energy (NE) in March 2001. That facility provides for replacement/consolidation of the TRA administrative spaces/functions, including TRA workers that would have been candidates for relocation to a Site Engineering and Resource Facility.

Figure ES-3. INEEL's infrastructure will be required to support identified missions for about 50 more years.

Construction of the new INEEL Consolidated Laboratory Complex and implementation of management initiatives to reduce staff levels and relocate some site employees to town will enable the INEEL to focus support infrastructure (e.g., roads, utility systems, and communication systems) capital and operating dollars on a smaller geographical area. That area would comprise the infrastructure that is most critical to INEEL missions. Accordingly, through facility closures, the INEEL Infrastructure Restoration/Optimization Project will save over $2.5 million in labor, power and heating costs annually. In addition, over $46.9 million in planned capital costs will be avoided. The primary objectives of the project are (a) to upgrade high-priority infrastructure needs for important missions and (b) to find opportunities to relocate/consolidate support functions, thereby avoiding life-cycle and mortgage costs while optimizing operating and maintenance costs. Both actions will effectively reduce the funding gap between life-cycle capital needs and expected capital funding levels.

Table ES-1. Summary of optimization proposals, preferred alternatives, costs and savings

Proposal	Preferred Alternative	Cost	Savings & Cost Avoidance *
1. INEEL Consolidated Laboratory Complex	Build new lab facility at INTEC, lease new lab space in Idaho Falls	Total project cost = $100M Life-cycle cost = $242M	Life-cycle savings = $268.4M ($164.4M avoided projects & $104.0M operations and maintenance savings)
2. INEEL Infrastructure Restoration/Optimization Project	Perform only preferred 10 mission-critical subproject alternatives	Total project cost = $78.8M	Life-cycle savings = $128.6M ($46.9M avoided projects & $81.7M operations and maintenance savings)
3. Workforce restructuring and relocation initiatives	No new construction. Reduce staffing, relocate some site people to Idaho Falls. Promote construction of the NE Administration Building Project at TRA	TBD personnel relocation costs. NE costs to construct TRA Administration Building	Life-cycle savings = $157M+ (41M avoided projects & 116M operations and maintenance savings. Based on 34 buildings considered for closure in initial SERF proposal)

* Includes savings and avoided costs accumulated to the facility end dates (i.e., 2036 for INTEC and 2047 for CFA)

These new proposals combined with the elimination of non-essential construction and upgrade expenditures can reduce the INEEL's infrastructure funding gap by over $416 million through FY 2010 (see details in Appendix A).

BBWI Infrastructure Programs was able to formulate these proposals from program needs and capital project forecasts compiled in the 2001 *Infrastructure Long-Range Plan*. The optimized proposals provide the infrastructure necessary to support current INEEL program mission needs at a greatly reduced cost. The optimized proposals also provide infrastructure necessary to support *INEEL Institutional Plan* mission goals to the extent practicable.

These three innovative new proposals fulfill PEMP 2.3.4.1 requirements to provide "… 1) new and/or upgraded INEEL laboratory facilities, 2) engineering, research and administrative support building(s), and 3) INEEL Infrastructure restoration of the necessary utilities, roads, roofs, mechanical systems, etc., and other supporting INEEL infrastructure to meet currently identified INEEL missions." The following sections provide summary overviews of the three proposals. The individual, detailed proposals are also attached. The detailed proposals include acquisition strategies, alternative analyses, preliminary functional design requirements, preliminary cost and schedule estimates, and justifications of mission

need. The proposals also considered union issues, safety and health considerations, and articulate in some detail estimated savings, cost avoidance, and other benefits.

INEEL Consolidated Laboratory Complex Project

The INEEL Consolidated Laboratory Complex project provides the most cost-effective and functional solution for meeting INEEL laboratory mission needs. This project replaces several operational- and capital-funded upgrades planned for INEEL laboratory facilities. The project enlists a consolidation concept to replace outdated and deteriorating site analytical, environmental, nuclear research, and radiological support laboratories. The work performed in those laboratories is key to meeting the INEEL's goals of timely remediation of INEEL hazardous and radioactive wastes. In addition, this project will provide radiological capability for the INEEL's Subsurface Geosciences Laboratory – which is a key component of the INEEL Institutional Plan.

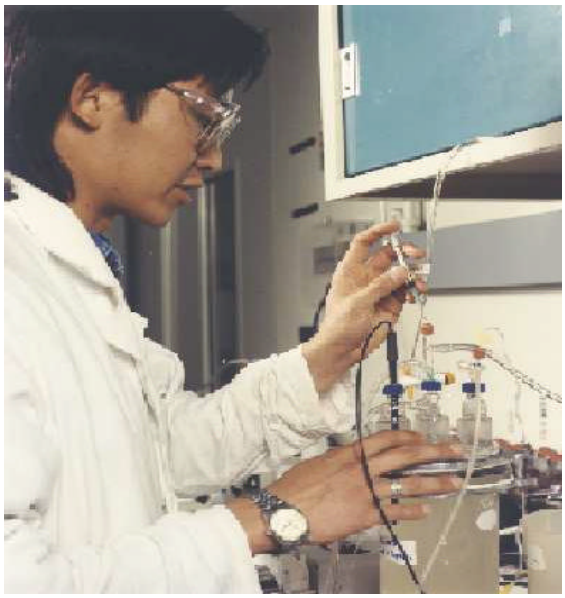

Figure ES-4. The objective of the INEEL Consolidated Laboratory Complex project is to provide, in the most cost-effective manner, the infrastructure necessary to sustain laboratory operations that are necessary to meet INEEL mission needs

The preferred alternative for the INEEL Consolidated Laboratory Complex project is to construct a new 150,000 ft^2 facility at INTEC and lease a new 65,000 ft^2 laboratory in Idaho Falls. Laboratory operations will be consolidated into these new, cost-effective facilities from the disparate and degraded existing laboratory facilities they replace. The preconceptual total project cost estimate for the preferred alternative is $100 million ($87 million construction, $13 million lease). This project will provide operating and maintenance cost savings of $4 million annually and contribute over $164 million in avoided capital upgrade/replacement costs. Additionally, this preferred alternative establishes space to conduct work currently performed in the Radiological and Environmental Sciences Laboratory (RESL) – a 38-year-old laboratory facility that is in dire need of repairs and upgrades.

Initial conceptualization of this line-item construction project (LICP) involved listing INEEL laboratory facilities that are vulnerable to being condemned for environmental, safety, and health reasons. The major facilities on this list include the CPP-602 Laboratory/Offices Building, CPP-620 Chemical Engineering Laboratory High Bay, CPP-630 Safety/Spectrometry Building, CPP-637 Process Improvement Facility, and CF-690 Radiological and Environmental Sciences Laboratory. The INEEL Consolidated Laboratory Complex will also replace other analytical, program support and field sampling support laboratories at the Central Facilities Area (CFA), Test Area North, and the Test Reactor Area.

Of the 185,000 ft^2 composing the laboratories that this new project would replace (see Table S-2 in ICLC Summary), 80% is considered to be in poor or very poor condition. Some buildings have failing ventilation systems (including laboratory space that is completely unusable due to collapsed heating, ventilation, and air conditioning ductwork); failing structures; asbestos exposure; hantavirus risks; inadequate electrical systems; electrical, plumbing, and structural systems code deficiencies; fire hazards; inadequate flammable and hazardous materials storage; and, in some cases, fungus growing within the walls. Loss of capability or capacity from these laboratories threatens INEEL's ability to accomplish its DOE mission.

Figure ES-5. The CPP-637 Process Improvement Facility laboratories are representative of many INEEL laboratories. The facility dates from 1959 and is in poor condition. The laboratories' waste treatment support functions are jeopardized by the facility's significant electrical, mechanical, and structural deficiencies

The requirements posed by PEMP 2.3.4.1 resulted in close, collective scrutiny of projects currently being considered to correct these problems. As a result, several alternatives to the currently proposed remedies were developed and analyzed (see Table ES-2). Some alternatives, such as adaptive reuse of the CPP-691 Fuel Processing Restoration Facility, were evaluated during the feasibility study but not pursued as viable options. These analyses resulted in the preferred alternative of consolidating INEEL laboratory operations into two new facilities rather than attempting individual upgrades to the current facilities.

On a life-cycle cost basis, the proposed new project provides these laboratory facilities in a much more cost-effective manner than would have been provided over the same term in the old facilities, or by alternative project proposals. The primary objective of the project is to provide the infrastructure necessary to sustain laboratory capabilities that will support timely remediation of INEEL hazardous and radioactive wastes and selected research and development activities in accordance with the *INEEL Institutional Plan*. This action fulfills the applicable requirements of PEMP 2.3.4.1 by supporting INEEL mission need and also significantly reducing the funding gap between life-cycle needs and expected funding levels.

Table ES-2. *Consolidated Laboratory Complex Project Alternatives*

Primary Alternatives	TPC/LCC	Advantages	Disadvantages	Remarks
1. Do Nothing	TPC = $0 LCC = $ 312M	Least capital investment	Highest life-cycle cost. Jeopardizes critical missions by failing to resolve pressing problems. Existing facilities will continue to require high maintenance and capital upgrades	Laboratory analyses required through at least 2035 Second lowest K-T alternative score
2. Replace individual systems and portions of existing facilities	TPC = $80M LCC = $289M	Reduces maintenance costs. Fixes major problem areas. Low construction cost. Allows completion of majority of missions	Approaches the cost of a new facility and would disrupt ongoing lab operations. Longest construction schedule. Doesn't address all lab deficiencies. Facilities still inefficient, old	Lowest K-T alternative score
3. Build new lab facility at INTEC, don't upgrade RESL	TPC = $98M LCC = $215M	Replaces most needed laboratories. Consolidates high-level operations into a single facility	Doesn't address all deficiencies (no low-level laboratories will be upgraded with this option, no consolidation of low-level functions). Upgrade to RESL not included	Middle K-T alternative score.
4. Build new lab facility at INTEC, lease new lab space in Idaho Falls*	TPC = $100M LCC = $242M	Most cost-effective and functional solution. Favorable life-cycle cost savings. Includes space for RESL work. Vacates deteriorating labs. Allows consolidation of low-level functions	Requires private-sector firm to accept lease renewal risk	Highest K-T alternative score – 17% higher than second-best
5. Build new lab facility at INTEC, remodel RESL	TPC = $120M LCC = $269M	Maintains all lab functions at the site. Eliminates deficiencies for both high- and low-level laboratories. Allows mission needs to be completed	Most expensive scenario. Doesn't fit current planning philosophy. Doesn't include cost-effective relocation of low-level functions to town	Second highest K-T alternative score

* Preferred alternative
TPC = Total project cost
LCC = Total discounted life-cycle cost
K-T = Kepner Tregoe

INEEL Site Engineering and Resource Facility

The Site Engineering and Resource Facility was initially planned to consolidate functions currently performed in 34 buildings at CFA, INTEC, and TRA (see Table S-1 in SERF Summary). These 34 buildings range in age from 7 to 49 years old and total over 350,000 ft^2. A facility consolidation of this magnitude was forecast to result in estimated annual surveillance and maintenance savings of $2.8 million. Additionally, $57 million in capital upgrades had been forecast for the facilities that would have been replaced by the Site Engineering and Resource Facility.

The INEEL is currently undergoing a workforce restructuring effort planned to reduce the BBWI population by 1,200 personnel. It is forecast that the 1,200-person reduction will be almost evenly divided between site and town locations - resulting in a site reduction of about 600 people. A work location optimization effort has also been initiated. This effort will relocate a significant number of remaining site workers to work locations in Idaho Falls.

The alternatives for establishing a Site Engineering and Resource Facility were reconsidered in the light of the major workforce restructuring now underway. The restructuring and subsequent relocation of remaining site employees to existing, newer site facilities and to available work locations in town significantly reduces the need for a new Site Engineering and Resource Facility. Consequently, although the developed and considered Site Engineering and Resource Facility alternatives are presented in this report, the preferred alternative is to not pursue such a facility. With the workforce restructuring and subsequent relocation of employees, desired site facility closures and associated cost savings can still be achieved. This approach would allow consolidation of some remaining site workers into the newest and most economical of the existing facilities. Additionally, this approach could save more than $157 million in life-cycle costs through closure of some of the INEEL's older, inefficient facilities including those that were candidates for replacement by a Site Engineering and Resource Facility (see Table S-1 in SERF Summary).

Figure ES-6. The 44-year-old Experimental Test Reactor Office Building at TRA is an example of the multiple, aged and/or high-cost site engineering, research and administrative facilities that would have been replaced with establishment of a new Site Engineering and Resource Facility. Workforce restructuring, employee relocation and a new NE administrative facility at TRA may now provide the same facility closure opportunities

In light of the recommendation that a new Site Engineering and Resource Facility not be pursued, it is especially important that the INEEL proceeds with construction of the TRA Administration Building Project as described in the Mission Need Document issued to the Office of Nuclear Energy (NE) in March 2001. That facility will replace 10 old and inefficient buildings including 8 buildings that were identified for possible replacement by a Site Engineering and Resource Facility. The 220-occupant NE facility provides consolidation of TRA administrative spaces/functions, including those for the 85 TRA workers that would have been candidates for relocation to a Site Engineering and Resource Facility. Additionally, funding for constructing or equipping a new administrative facility at TRA may be available under the terms of an Energy Saving Performance Contract, which makes funding available for facility modifications and upgrades from energy savings realized through closure of older, energy-inefficient facilities. INEEL Energy Management and the TRA Landlord are currently studying the opportunities and feasibility of applying energy efficiency funding at TRA.

Table ES-3. *Site Engineering and Resource Facility Alternatives*

Primary Alternatives	LCC	Advantages	Disadvantages	Population Scenario
1. Do Nothing – Continue to use existing buildings	$244M	None	Existing 34 facilities will continue to require high maintenance and capital upgrades	This option based on BBWI population forecasts as published in 2001 LRP (February 2001 staffing)
2. Build single new Site Engineering and Resource Facility at INTEC	$120M	34 existing buildings would be consolidated into one 150,000 ft^2 facility, reducing footprint by 210,000 ft^2	Ignores TRA's requirement to retain TRA personnel in close proximity	This option based on BBWI population forecasts as published in 2001 LRP (February 2001 staffing)
3. Build new Site Engineering and Resource Facilities at INTEC and TRA	$149M	Even though two facilities, still less costly than maintaining current facilities	Doesn't have all consolidation advantages as would single facility	This option based on BBWI population forecasts as published in 2001 LRP (February 2001 staffing)
4. Private developer builds new facility and leases it back, includes maintenance in lease	$111M	Eliminates need for capital dollars, successfully implemented at other DOE sites	Must enable private construction on government ground	This option based on BBWI population forecasts as published in 2001 LRP (February 2001 staffing)
5. Do Nothing – Continue to use existing buildings	$153M	None	Existing 24 facilities will continue to require high maintenance and capital upgrades	This option based on BBWI restructuring (1,200 employee reduction)
6. Build smaller single new Site Engineering and Resource Facility at INTEC	$89M	24 existing buildings would be consolidated into one 120,000 ft^2 facility, reducing footprint by 108,000 ft^2	Ignores TRA's requirement to retain TRA personnel in close proximity	This option based on BBWI restructuring (1,200 Employee Reduction)
7. Build smaller new Site Engineering and Resource Facilities at INTEC and TRA	$111M	Even though two facilities, still less costly than maintaining current facilities	Doesn't have all consolidation advantages as would a single facility	This option based on BBWI restructuring (1,200 employee reduction)
8. Build new Site Engineering and Resource Facility at TRA. INTEC will use newer existing buildings	$116M	Requires capital construction of only one smaller facility	Not very accessible by non-TRA personnel, retains some existing older buildings at INTEC	This option based on BBWI restructuring (1,200 employee reduction)
9. Do Nothing – Continue to use existing buildings	$87M	None	Existing TRA facilities will continue to require high maintenance and capital upgrades (INTEC & CFA facilities are newer)	This option based on BBWI restructuring and worker relocation (1,200 employee reduction with 300 moved to town)
10. Build new EM Office Facility at TRA, and move additional 300 site people to town, INTEC & CFA will use existing newer buildings.	$55M	Requires construction of only one small office facility for 85 TRA SERF candidate Workers. Moves some TRA people out of 7 high-cost buildings	Does not address overall Administrative Office needs for TRA. TRA needs space for a total of 220 office workers, replacing 10 old buildings.	This option based on BBWI restructuring and worker relocation (1,200 employee reduction with 300 moved to town)

Note: None of the originally developed alternatives are recommended due to a reduction of space needs resulting from workforce restructuring (downsizing) and subsequent relocation of remaining site employees to available work locations in Idaho Falls

The INEEL Site Engineering and Resource Facility would have provided for the cost-effective acquisition of functional engineering, research and administrative support building(s) as specified in PEMP measurement 2.3.4.1. On a life-cycle cost basis, the best alternative would have provided these facilities in a much more cost-effective manner than would have been provided over the same term in the old facilities, or by alternative project proposals. However, with the planned workforce restructuring, a new Site Engineering and Resource Facility is not required. And facility closures and associated cost savings can still be achieved through relocation of employees to available work locations in Idaho Falls and consolidation of the few remaining site office workers into the newest and most economical of the existing facilities.

INEEL Infrastructure Restoration/Optimization Project

The INEEL Infrastructure Restoration/Optimization Project provides the most cost-effective solutions for upgrading and maintaining only the most important infrastructure required to meet INEEL mission needs. Upgrades to only the minimum, most critical infrastructure are enabled by implementation, in whole or in part, of the two preceding PEMP proposals – the INEEL Consolidated Laboratory Complex project and the alternative to the Site Engineering and Resource Facility. Establishing those proposals in their recommended methods would result in a reduction/consolidation of needs for support infrastructure. Therefore, support infrastructure capital upgrades and operational expenditures can be focused and minimized. However, if either the consolidated lab or workforce restructuring and relocation proposals were not pursued/approved, then mission-critical lab and/or office needs would either have to be added to this project scope or be submitted as separate new capital project requests.

The primary objectives of the INEEL Infrastructure Restoration/Optimization Project are (a) to upgrade/maintain only high-priority infrastructure required for important missions and (b) to find opportunities to relocate/consolidate support functions, thereby avoiding life-cycle and mortgage costs while optimizing operating and maintenance costs. Both actions will effectively reduce the funding gap between life-cycle capital needs and expected capital funding levels.

Figure ES-7. Upgrading components of the CFA substation is one example of infrastructure upgrades deemed most critical to INEEL mission needs

INEEL Infrastructure Restoration/Optimization Project development involved making realistic assumptions about what infrastructure was most important to INEEL's future, and then developing a prioritization process for selecting infrastructure life-cycle needs from the long-range plan for the 2004 through 2010 LICP cycle. The following 10 subprojects were selected as key subprojects to meet mission need criteria. After a preconceptual alternative analysis was completed for each subproject, the listed cost-effective solutions were recommended for conceptual design. These subprojects are discussed in more detail in the attached INEEL Infrastructure Restoration/Optimization Project proposal.

1. Replace the existing CFA substation high-voltage bus and insulators with modern design equivalents ($1,930K).

2. Perform upgrades to Chemical Processing Plant (CPP)-606 electrical and mechanical systems ($5,060K).

3. Replace INTEC demineralized water distribution piping ($1,570K).

4. Upgrade INTEC emergency communications system ($14,730K).

5. Upgrade CPP-663 potable water system ($370K).

6. Upgrade INTEC fire alarm system ($11,860K).

7. Replace high-voltage mission-critical transformers, breakers, and switches ($30,380K).

8. Upgrade road systems ($8,200K).

9. Modify INTEC facilities to accommodate a crafts and warehouse move from CFA ($2,060K).

10. Upgrade IF-602 heating, ventilating, and air conditioning system and electrical system ($2,643K).

Alternative solutions for each of the subproject problems were generated and preconceptualized. A more detailed analysis/evaluation will be performed during the conceptual stage. The estimates shown above were provided for the most cost-effective alternative for each of the subprojects.

Predominate drivers for capital upgrades are the schedules for the INTEC programs. For example, high-level waste has to be treated and ready for shipment by 2035. Repackaging and shipping spent nuclear fuel will take place during this same timeframe. Consequently, the infrastructure at INTEC supporting that activity has to be serviceable throughout the period at a minimum. Some infrastructure support will even be required beyond 2035.

The primary benefit of the INEEL Infrastructure Restoration/Optimization Project is the restoration of infrastructure critical to important INEEL missions. In addition, through facility closures, the infrastructure optimization opportunity portion of this project will provide over $2.5 million in saved labor, power, and heating costs annually. Finally, over $46.9 million in planned life-cycle capital costs will be avoided.

The selected alternatives for the INEEL Infrastructure Restoration/Optimization Project provide optimum infrastructure functionality at minimum cost. The selected alternatives provide for significantly less capital expenditure (as compared to current plans), and optimal surveillance and maintenance cost reductions.

The INEEL Infrastructure Restoration/Optimization Project provides for the cost-effective restoration and maintenance of the necessary utilities, roads, roofs, mechanical systems, etc., and other supporting INEEL infrastructure to meet currently identified INEEL missions, as specified in PEMP measurement 2.3.4.1. On a life-cycle cost basis, the selected alternatives provide critical infrastructure in a much more cost-effective manner than would have been provided over the same term by existing infrastructure, or by alternative project proposals.

Value-added INEEL Infrastructure Management

As stated above, BBWI Infrastructure Programs has begun a work assignment optimization initiative which will serve to reduce even further the needs and costs of INEEL infrastructure maintenance and upgrades.

The INEEL is currently undergoing a workforce restructuring effort (downsizing), based in part on the funding that is anticipated to be appropriated to the INEEL. The restructuring is currently planned to reduce the INEEL population by 1,200 personnel – of which over 400 have already left in response to an Early Retirement Initiative. The 1,200-person reduction is estimated to be almost evenly divided between site and town locations, resulting in a site reduction of 600 people and a vacancy of 600 town locations. BBWI proposes to subsequently relocate as many site employees as possible into the vacated town locations. Supporting an employee in town is significantly less expensive than at the site.

The optimization initiative includes a company-wide review of work locations for all employees. While many employees will continue to be located at the INEEL site, indications are the INEEL has an opportunity for major cost savings and productivity improvements by relocating the maximum number of employees to town. This site-to-town relocation initiative will result in less space needed at the site and, therefore, less needed infrastructure. The site-reduction effort will further reduce the need for support services and associated costs at the site. The initiative especially impacted the Site Engineering and Resource Facility—as originally proposed (see options and recommendations above). Accordingly, BBWI Infrastructure Programs will take full advantage of this site-reduction opportunity and factor its effects into PEMP 2.3.4.1 proposals.

The INEEL has also embarked on another significant effort to reduce infrastructure costs. The "Nine-Block" initiative provides a risk-based methodology for the evaluation and graded application of commercial practices to INEEL construction execution.

Construction according to industry standards and codes as opposed to INEEL-specific requirements and processes can result in significant savings of both time and money. Accordingly, the Nine Block process is expected to yield additional savings when applied to the proposals delineated in this document. Implementation of commercial practices may involve a graded application to INEEL work control procedures, surveillance and quality requirements, and documentation.

These unassigned initiatives enable the INEEL to provide functional facilities and infrastructure at the INEEL site at even less cost than projected in the original PEMP 2.3.4.1 proposals.

Conclusion

The proposals, as presented by BBWI in this document, go a long ways towards ensuring the INEEL infrastructure’s ability to satisfy primary demands for the next 50 years. The INEEL Consolidated Laboratory Complex provides a modern, efficient and safe facility to support completing obligations associated with the Governor’s Agreement. The recommendation also allows a state-of-the-art facility to be constructed in Idaho Falls to accommodate the cold laboratory applications associated with our cleanup obligations, as well as modern laboratory space with which to expand our growing R&D business. The alternative proposal to the Site Engineering and Resource Facility provides the most cost effective method to deal with smaller site populations and the need for significant facility closures and mortgage reduction. The Restoration/Optimization Project focuses INEEL maintenance dollars on those infrastructure items that are critical to mission success.

Together, these three BBWI proposals fully meet PEMP 2.3.4.1 measure requirements. The proposals reduce the cumulative funding gap by over $416 million through fiscal year 2010 and position the INEEL to meet the challenges of the future with an infrastructure that is capable of functioning effectively through our forecast mission end of 50 years.